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Coronavirus Disease (COVID)-19: World Health Organization Definitions and Coding to Support the Allergy Community and Health Professionals



Luciana K. Tanno, MD, PhD^{a,b,c,d}, Thomas Casale, MD^e, and Pascal Demoly, MD, PhD^{b,c,d} Sao Paulo, Brazil; Montpellier, Paris, France; and Tampa, Fla

In June 2018, the World Health Organization (WHO) Collaborating Center (WHO CC) for the Scientific Classification of Allergic and Hypersensitivity Diseases was established at the University Hospital of Montpellier, headed by Tanno and Demoly.¹ This designation is the result of recognition by the WHO of all the efforts of the *ALLERGY in ICD-11 initiative*²⁻⁶ and is intended to provide academic, research, and scientific support to the WHO in the implementation, refinement, and maintenance of the WHO Family of International Classifications (WHO-FIC) in the areas of our expertise. WHO CCs are institutions designated by the Director-General of the WHO and endorsed by the national minister of health to carry out activities in support of the WHO programs, such as communicable diseases, nutrition, mental health, occupational health, among others. Currently, there are 25 WHO CCs responsible for the WHO-FIC, and the Montpellier WHO CC is the only one with expertise in allergy and clinical immunology.

The WHO is a recognized specialized agency of the United Nations concerned with international public health. Because the Montpellier WHO CC is aligned with WHO actions to support the community and tailor actions for the quality of care of patients, it is crucial that accurate information is disseminated and used, particularly in public health emergency situations. Because of the current coronavirus (COVID-19) pandemic, we provide updates on WHO definitions and coding for COVID-19 to support the allergy community.

The current outbreak of the novel COVID-19, epicentered in Hubei Province of the People's Republic of China, with the first reports dated at the end of 2019. China bore the large burden of morbidity and mortality in February 2020. The epidemic has rapidly spread to other countries, and the WHO Emergency Committee declared a global health emergency on January 30, 2020. Europe became the epicenter of the epidemic in early April 2020, and due to the number of countries reporting cases, the WHO considered it as a pandemic. The case detection rate is increasing exponentially, and currently, the number of COVID-19 cases surpassed 2,954,222 globally with 202,597 deaths according to the April 28, 2020, WHO report⁷⁻⁹ (Figure 1).

Recommendations have been issued by the WHO aiming to: (i) interrupt human-to-human transmission including reducing secondary infections among close contacts and health care workers, preventing transmission amplification events, health system overload, and preventing further international spread; (ii) identify, isolate, and care for patients early, including providing optimized care for infected patients; identify and reduce transmission from the animal source; (iii) address crucial unknowns regarding clinical severity, extent of transmission and infection, treatment options, and accelerate the development of diagnosis, therapeutics, and vaccines; (iv) communicate critical risk and event information to all communities and counter misinformation; (v) minimize social and economic impact through multisectoral partnership.¹⁰

A combination of public health measures is crucial to prevent the further spread at the international level, such as rapid identification, diagnosis, and management of cases; identification and follow-up of the contacts; infection prevention and control in health care settings; implementation of health measures for travelers; awareness raising in the population; and risk communication. Diagnostic testing for COVID-19 is critical to track the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), understand epidemiology, inform case management, and suppress transmission. However, the concern is higher in low- and middle-income countries, where the health resources are limited.

Although there is still no specific treatment to the COVID-19, knowledge in the field is constantly evolving. Remarkable is the increase in the number of publications when the term "COVID-19" is searched in PUBMED. It jumped up from 3 publications in 2019 to 1432 documents in March 2020. Even with the incremental number of publications, no publication so far has covered the definitions and coding of COVID-19.

COVID-19 can progress to severe chest symptoms in 75% of patients.⁹ According to a Chinese report⁹ including 72,314 confirmed cases, COVID-19 can progress to severe chest

^aHospital Sírío-Libanês, Sao Paulo, Brazil

^bDivision of Allergy, Département de Pneumologie et Addictologie, University Hospital of Montpellier, Montpellier, France

^cSorbonne Université, INSERM UMR-S 1136, IPLESP, Equipe EPAR, Paris, France

^dWHO Collaborating Centre on Scientific Classification Support, Montpellier, France

^eMorsani College of Medicine, University of South Florida, Tampa, Fla

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Corresponding author: Luciana K. Tanno, MD, PhD, Division of Allergy, Department of Pulmonology, Hôpital Arnaud de Villeneuve, University Hospital of Montpellier, 371, av. du Doyen Gaston Giraud - 34295, Montpellier cedex 5, France. E-mail: luciana.tanno@gmail.com.

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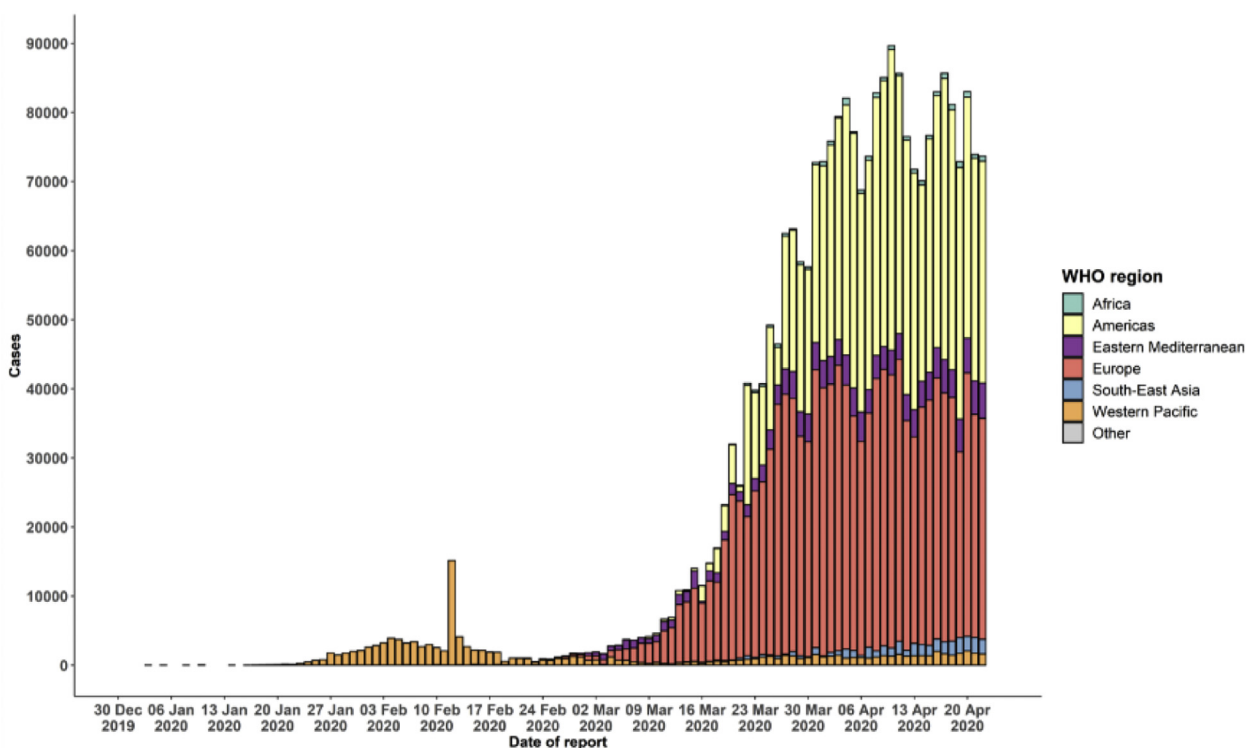
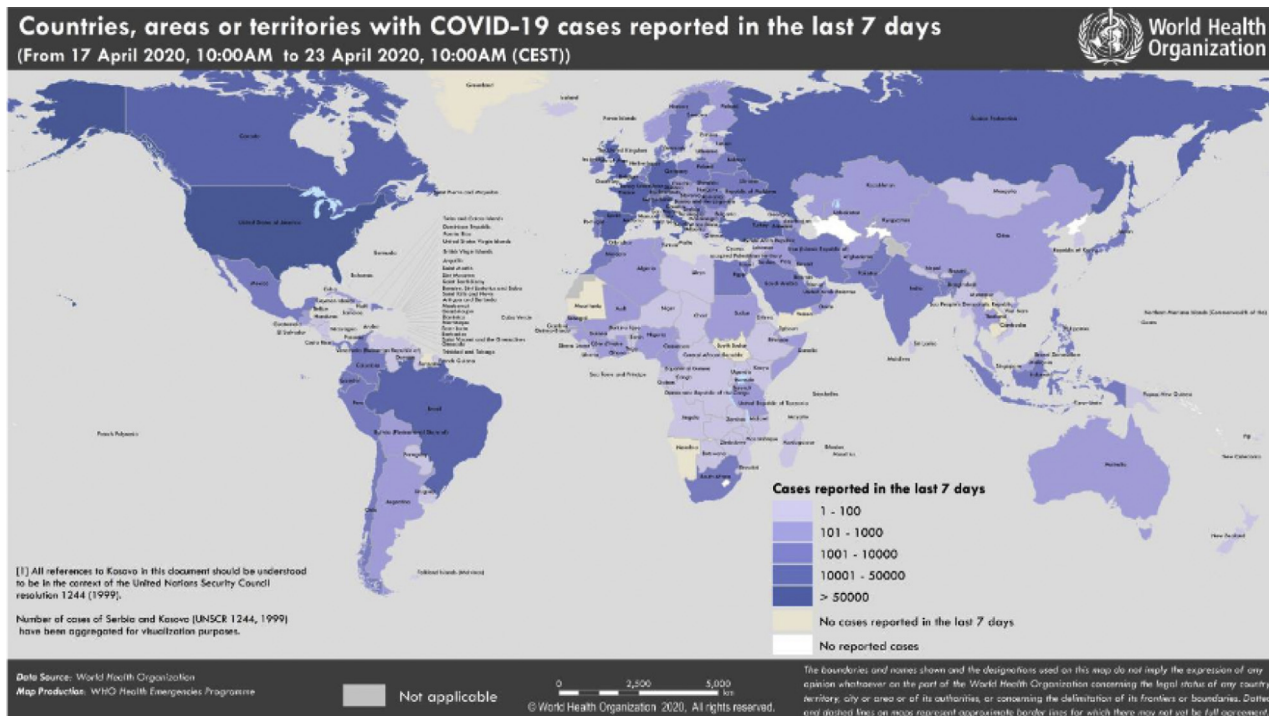


FIGURE 1. World Health Organization data on the COVID-19 pandemic: distribution of cases and epidemic curve of confirmed cases, April 23, 2020.¹⁰

symptoms in 75% of patients and the mortality rate ranges from 1% to 5%. The apparent mortality may, however, decrease in the future because no massive detection data are available and more than 80% of infected people have little or no symptoms and are therefore not tested. Older patients with comorbid conditions

have been associated with even higher mortality rates (up to 15%), suggesting particularly susceptible populations.⁷ Although COVID-19 appears to have a milder course and less aggressive attack rate in children, the outbreak is spreading fast and deaths have been reported in all ages.

TABLE I. Case definitions based on the World Health Organization official recommendations

A suspected case is defined when the patient fits one of the 3 situations	(I) Acute respiratory illness (fever and at least 1 sign/symptom of respiratory disease, eg, cough, shortness of breath) and a history of travel to or residence in a location reporting community transmission of COVID-19 during the 14 days before symptom onset. (II) Acute respiratory illness and contact with a confirmed or probable COVID-19 case in the last 14 days before symptom onset. (III) Acute respiratory illness (fever and at least 1 sign/symptom of respiratory disease, eg, cough, shortness of breath; AND requiring hospitalization) AND in the absence of an alternative diagnosis that fully explains the clinical presentation.
A probable case is defined when the patient fits one of the 2 situations	(I) A suspected case for whom testing for the COVID-19 virus is <i>inconclusive</i> (inconclusive being the result of the test reported by the laboratory). (II) A suspect case for whom testing could not be performed for any reason.
A confirmed case is determined as a person with laboratory confirmation of the COVID-19 infection following the WHO technical guidance for laboratory testing, irrespective of clinical signs and symptoms.	
Contact is defined as a person who experienced any one of the following exposures during the 2 days before and 14 days after the onset of symptoms of a probable or confirmed case	(I) Face-to-face contact with a probable or confirmed case within 1 m (or 3.28084 ft) and for more than 15 min (being in the same setting with the confirmed case without necessarily having direct physical contact). (II) Direct physical contact with the probable or confirmed case (face-to-face contact with direct physical contact). (III) Direct care for the patient with probable or confirmed COVID-19 disease without using proper personal protection equipment (prolonged direct physical contact with cases). (IV) Other situations as indicated by local risk assessment (eg, agglomerations in public settings and public transport).
Symptomatic transmission refers to transmission from a person while symptoms and signs are present. Preliminary data suggest that individuals may be more contagious around the time of the symptom onset as compared with later on in the disease. Epidemiological and virology studies provide evidence that COVID-19 is primarily transmitted from symptomatic subjects to others who are in close contact through respiratory droplets, by direct contact with infected persons, or by contact with contaminated objects and surfaces.	
Presymptomatic transmission is the period between the exposure to the virus (becoming infected) and the onset of the symptoms in which the transmission can occur from an infected nonsymptomatic subject. This period, also known as the incubation period for COVID-19, is on average 5 to 6 days but can be up to 14 days.	
Asymptomatic transmission refers to the transmission of the virus from a person who does not develop symptoms. An asymptomatic laboratory-confirmed case is a person infected with COVID-19 who does not develop symptoms.	
COVID-19 death is defined for surveillance purposes as a death resulting from a clinically compatible illness in a probable or confirmed COVID-19 case unless there is a clear alternative cause of death that cannot be related to COVID disease (eg, trauma). There should be no period of complete recovery between illness and death.	

m, meters, ft, feet, min, minutes.

Adapted from the World Health Organization website.¹⁰

There is no doubt that specific actions have been proven to be essential to prevent the transmission such as social distancing and specific personal hygiene measures, such as washing hands. The US Centers for Disease Control and Prevention has recommended the use of personal protective equipment (PPE) by health care workers for standard, contact, and airborne precautions and eye protection.¹¹ However, many areas in the United States and the world are experiencing a severe shortage of PPE for health care workers and patients.

To support governmental bodies, health care professionals, and monitoring systems, the WHO issued and updates periodically the Global Surveillance for human infection with COVID-19 document,¹⁰ which includes case definitions for easy reference, as described in Table I.

For confirmed asymptomatic cases, the period of contact is measured as the 2 days before through the 14 days after the date

on which the sample was taken, which led to confirmation. Although there are reports that the upper limit can be extended for more days,¹¹ the parameter of 14 days is used officially by the WHO. Because the content of this document is based on the WHO statements, we kept 14 days as the upper limit.

Recently, the WHO Classification and Terminology Unit proposed updates in the International Classification of Diseases, 10th Revision (ICD-10)^{12,13} and ICD-11¹⁴ COVID-19-related situations classification and coding (Table II). Because the COVID-19 disease outbreak has been declared a public health emergency of international concern, an emergency ICD-10 code of "U07.1 COVID-19, virus identified" is assigned to a disease diagnosis of COVID-19 confirmed by laboratory testing. The emergency ICD-10 code of "U07.2 COVID-19, virus not identified" is assigned to a clinical or epidemiological diagnosis of COVID-19 where laboratory confirmation is inconclusive or not

TABLE II. COVID-19 classification and coding in the ICD-10 and ICD-11¹²⁻¹⁴

COVID-19 codes in ICD-10	
B34.2	Coronavirus infection, unspecified site (B)
Excl: COVID-19, virus identified (U07.1)	
COVID-19, virus not identified (U07.2)	
U04.9	Severe acute respiratory syndrome [SARS] (U04.9)
Excl: COVID-19, virus identified (U07.1)	
COVID-19, virus not identified (U07.2)	
U07	Emergency use of U07 (A,B)
Note: Codes U00-U49 are to be used by the WHO for the provisional assignment of new diseases of uncertain etiology. In emergency situations, codes are not always accessible in electronic systems. The specification of category U07 in the way it is done here will make sure that this category and the subcategories are available in every electronic system at any time and that they can be used upon instruction by the WHO, immediately.	
U07.1	COVID-19, virus identified (A)
Use this code when COVID-19 has been confirmed by laboratory testing irrespective of the severity of clinical signs or symptoms	
Use additional code, if desired, to identify pneumonia or other manifestations	
Excl: Coronavirus infection, unspecified site (B34.2)	
Coronavirus as the cause of diseases classified to other chapters (B97.2)	
Severe acute respiratory syndrome [SARS], unspecified (U04.9)	
U07.2	COVID-19, virus not identified (B)
Use this code when COVID-19 is diagnosed clinically or epidemiologically but laboratory testing is inconclusive or not available	
Use additional code, if desired, to identify pneumonia or other manifestations	
COVID-19 NOS	
Excl: COVID-19:	
<ul style="list-style-type: none"> ● Confirmed by laboratory testing (U07.1) ● Coronavirus infection, unspecified site (B34.2) ● Special screening examination (Z11.5) ● Suspected but ruled out by negative laboratory results (Z03.8) 	
U07.3	Emergency use of U07.3 (A,B)
U07.4	Emergency use of U07.4 (A,B)
U07.5	Emergency use of U07.5 (A,B)
U07.6	Emergency use of U07.6 (A,B)
U07.7	Emergency use of U07.7 (A,B)
U07.8	Emergency use of U07.8 (A,B)
U07.9	Emergency use of U07.9 (A,B)
COVID-19 codes in ICD-11	
"RA01.0 COVID-19, virus identified" (laboratory confirmed) (A)	
"RA01.1 COVID-19, virus not identified" (suspected cases) (A)	

A, exclusive COVID-19 codes; B, coronavirus, non-COVID-19 codes; ICD, International Classification of Diseases.

available. Both U07.1 and U07.2 may be used for mortality coding as the cause of death following the international guidelines for certification and classification (coding) of COVID-19. B34.2 concerns other coronavirus infections, but relevant to mortality and morbidity statistics purposes, and excludes SARS (U04.9) and COVID-19 coronavirus. B97.2 (Coronavirus as the cause of diseases classified to other chapters) concerns

coronavirus affecting different topographies or organs or systems according to the ICD chapters. It can be combined with B34.2 when due to non-COVID-19 coronavirus infection, non-SARS, or with U07.2 when the COVID-19 is still not confirmed. Codes U00-U49 are to be used by the WHO for the provisional assignment of new diseases of uncertain etiology. In emergency situations, codes are not always accessible in electronic systems. The specification of category U07, in the way it is done here, will make sure that this category and the subcategories are available in every electronic system at any time and that they can be used upon instruction by WHO immediately. In ICD-11, the code for the confirmed diagnosis of COVID-19 is RA01.0 and the code for the clinical diagnosis (suspected or probable) of COVID-19 is RA01.1.

Although we still have limited data, the current recommendations provided are based on the publications in the field. Recently, a consensus document regarding individual allergic conditions management during the COVID-19 pandemic has been published by the AAAAI, ACAAI, CSACI, and *JACI: In Practice*.¹⁵ The Montpellier WHO CC leadership would like to support these recommendations besides providing the WHO updates on definitions and coding. The information presented here intends to be helpful to the community but represents a course of action in a highly specific situation due to the state of emergency.

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